Iowa Environmental Council

521 East Locust Street, Suite 220
Des Moines, Iowa 50309-1939
www.iaenvironment.org

HEALTHY LANDS, HEALTHY WATERS: A WATERSHED FRAMEWORK FOR IOWA

***Healthy Lands, Healthy Waters* calls for the adoption of a comprehensive watershed framework to address Iowa's water quality challenges at state and local levels.**

In 2007, the Watershed Quality Planning Taskforce recommended a watershed framework approach, which would include prescriptions for planning, monitoring and action. The framework was authorized by the Iowa legislature in 2008 and discussed as a foundation of the state's 2012 Nonpoint Source Management Plan and 2013 Nutrient Reduction Strategy. It is also outlined in the Iowa Surface Water Protection, Flood Mitigation and Watershed Management Act. Unfortunately, this approach has yet to be funded or fully implemented.

The Iowa Environmental Council recognizes that there are many challenges related to improving Iowa's water quality, including more technical assistance to work with farmers and landowners to implement conservation practices. Despite years of good effort, recent events and long-standing issues have made it clear that we must do more to protect our water supplies while also maintaining our agricultural productivity. Success will require working collaboratively, in a coordinated approach that embraces continuous improvement.

The Council proposes that Iowa:

- **Implement a systematic watershed approach**. Because watersheds are defined by natural hydrology, they represent the most logical basis for managing water resources.
- **Elevate the role of Watershed Management Authorities (WMAs)**. Created in the Iowa Surface Water Protection, Flood Mitigation, and Watershed Management Act, WMAs are a mechanism for cities, counties, Soil and Water Conservation Districts (SWCDs) and other stakeholders to cooperatively engage in watershed planning and management at the local level.
- **Create a long-term, sustainable source of funding**. Significant funding is needed to implement a watershed framework as part of the state's overall commitment to environmental and natural resource management and protection.

BACKGROUND

Iowa has 56 HUC8-level watersheds that range from 390 to 1,954 square miles in size (the Hydrologic Unit Code (HUC) is a national code that identifies watersheds at different geographical scales). Within these watersheds are smaller nested sub-basins at the HUC10 and HUC12 scale, etc. [1]

Iowa's water and fertile soil are foundations of the state's economy and quality of life. In 2014, Iowa was the second-highest agricultural producing state in the nation thanks to 88,000 Iowa farms covering 30.5 million acres of some of the richest land in the world.[2] [3] Those productive farm fields share the landscape with more than 71,000 miles of rivers and streams, over 5,400 lakes, ponds and wetlands, and four flood management reservoirs. These waters supply critical resources to homesteads, towns, cities, businesses and industry, and provide important wildlife habitat and recreational opportunities. [4]

Managing Iowa's cropland and water is critical to sustainable food and fuel production, water quality and quantity, and Iowa's economy, yet it continues to be our most daunting challenge. In 2014, 571 Iowa lakes and river segments were listed as impaired, meaning they do not meet the water quality standards for one or more designated uses. This included 92 segments that had not been previously listed.[5] The most frequently identified causes of impairment of streams and rivers are indicator bacteria (*E. coli*), biological impairments, and fish kills. For lakes, the most commonly identified impairments are algal turbidity, non-algal turbidity (suspended sediment), and indicator bacteria (*E. coli).*

With the exception of a numeric limit for nitrate to protect drinking water (currently 10 milligrams/liter), Iowa does not yet have numeric water quality criteria for nitrogen and phosphorus – two water pollutants prevalent in Iowa – or sediments. The lack of numeric criteria makes identification of such impairments relatively rare, even though these pollutants often contribute to related problems in Iowa waters and significant water quality problems downstream.[6] Nonpoint pollution, which comes from water runoff – as opposed to point source pollution, which comes from a specific source or "pipe" – contributes an estimated 92% of the nitrogen and 80% of the phosphorus that end up in the state's waters.[7] Phosphorus pollution can cause dangerous toxic algae blooms in lakes and streams that make the water unsafe for swimming. High nitrate levels threaten public drinking water supplies and are a significant and growing problem for communities large and small. They also pose health threats for many rural Iowans who depend on private wells. Eventually, undesirable levels of these pollutants are exported to the Mississippi River and the Gulf of Mexico. Here, they contribute to the growing "Dead Zone," now the size of Connecticut and Rhode Island combined, which is destroying a major international fishery and a regional economy.

Iowa has introduced two recent statewide plans to reduce water pollution and address these concerns, the Iowa Nonpoint Source Management Plan (INSMP) and the Iowa Nutrient Reduction Strategy (INRS). Additional locally led watershed efforts such as lake restoration program projects have been underway for more than a decade. Many of these projects have made progress locally, yet statewide the number of polluted water bodies identified in Iowa continues to increase.

---

[1] Iowa Department of Agriculture and Land Stewardship. 2001. Iowa Watershed Task Force Report. http://www.iowaagriculture.gov/soil/pdf/IWTFReport.pdf.

[2] United States Department of Agriculture National Agricultural Statistics Service. "2014 State Agriculture Overview." http://www.nass.usda.gov/Quick_Stats/Ag_Overview/stateOverview.php?state=IOWA.

[3] United States Department of Agriculture, Economic Research Service. "Farm Income and Wealth Statistics: State Rankings 2014." http://www.ers.usda.gov/data-products/farm-income-and-wealth-statistics/farm-finance-indicators-state-ranking.aspx.

[4] Iowa Department of Natural Resources. 2001. "Water Quality in Iowa during 1998 and 1999."

[5] Iowa Department of Natural Resources Website. "Iowa's Section 303(d) Impaired Waters Listings."http://www.iowadnr.gov/Environment/WaterQuality/WaterMonitoring/ImpairedWaters.aspx.

[6] Iowa Department of Natural Resources. "Summary for the final 2014 list of impaired waters & Integrated Report" (PDF online).

[7] Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural Resources and Iowa State University College of Agriculture and Life Sciences. "Iowa Nutrient Reduction Strategy: A science and technology-based framework to assess and reduce nutrients in Iowa waters and the Gulf of Mexico. Updated September 2014. (PDF online). http://www.nutrientstrategy.iastate.edu/sites/default/files/documents/NRSfull-141001.pdf.

WHY IOWA NEEDS A WATERSHED FRAMEWORK

Instead of a piecemeal approach to resource management, Iowa needs a collaborative, overarching framework that brings together water and land management into a single strategy that is flexible, effective and efficient. The framework ***would not abandon or replace existing plans and projects***, but rather knit them together to provide additional resources and coordination to implement plans already in place, resulting in long-term returns on investments.

Like a comprehensive health plan with individual components targeted to address specific concerns *and* improve overall health, a watershed framework should be holistic. Prescriptions for individual actions should be integrated to consider the watershed's water and soil conservation status, flooding issues and related concerns like public health and recreation. Similar to a regular health care physical, watersheds also need a periodic assessment to track known problems, identify and address new concerns.

WHAT IS A WATERSHED FRAMEWORK?

A watershed framework is a comprehensive, assessment-based, long-term, locally led planning framework that operates on a cyclical basis. There are three major components of a watershed framework:

(1) It considers watersheds as interconnected communities with a shared responsibility to improve water resource management
(2) It utilizes adaptive management, an approach that depends on a long-term rolling cycle of assessment, planning, implementation and monitoring that starts with an initial baseline assessment;
(3) It seeks opportunities to maximize benefits by implementing practices that achieve multiple goals, resulting in efficiencies and cost savings.

Watersheds as Communities. Viewing a watershed as a community involves organizing, planning and implementation around hydrological, rather than political, boundaries. Water does not respect city or county lines, nor do pollutants and contaminants. A watershed approach brings urban and rural, upstream and downstream stakeholders together to solve the problems of the entire watershed not just in the water, but on the land. This approach recognizes that we are all part of a larger landscape, and our actions have effects on those around us.

Adaptive Management. Water quality is a complex issue that requires a long-term commitment. As such, the process of adaptive management is vital to a successful strategy. Utilizing a rolling cycle of assessment, planning, implementation and monitoring, each local watershed can respond as needed to its particular impairments and opportunities. A systematic rolling cycle approach builds on previous work. A comprehensive pre-assessment examination of current conditions is important to provide a foundation from which to work. This allows agencies and individuals to learn what is and is not working, and use that information to revise plans and adapt their actions accordingly.

Maximum Benefits. A watershed approach also allows consideration of opportunities to achieve multiple benefits from a single investment. Private landowners and Iowa citizens, with assistance from the federal government, are investing significant resources to improve water quality. Often the most cost-effective solution is to utilize natural systems to gain multiple benefits. For example, a water filtration wetland or saturated buffer can boost water quality and provide valuable wildlife habitat.

Improving soil health is one important way to achieve multiple benefits. Healthy soils hold water and nutrients on the land, keeping them out of rivers and lakes, and help mitigate damage from extreme weather events that can exacerbate erosion, runoff and flooding. Healthy soils also benefit landowners by preserving their land's long-term productivity, and maintaining yields during weather extremes such as droughts and torrential rain events. To maintain and restore our soils, conservation planning must move beyond the outdated concept of a "tolerable soil loss" to instead focus on building soil and improving soil health and functions.

Strategies should also encourage longer-term commitments by landowners to gain a better return on investments and focus on creating lasting behavior change. For example, it may be advantageous to give preference to, or provide extra incentives for, those who commit to using a conservation practice such as cover crops for more than one year. Securing a multi-year commitment encourages farmers to move beyond a first-try stage. Especially in critical areas of a watershed, it can be more cost-effective to purchase a long-tem or permanent easement for a buffer or CREP wetland, rather than to pay incentives for short-term or annual practices that may not be maintained.

OVERVIEW OF CURRENT IOWA PLANS

As stated earlier, some aspects of a watershed framework are currently being implemented through two statewide plans, the Iowa Nonpoint Source Management Plan and the Iowa Nutrient Reduction Strategy. However neither plan is comprehensive.

Iowa's Nonpoint Source Management Plan (INSMP); was created and adopted in July, 2012, by a large and diverse panel of stakeholders. It is administered by the Iowa Department of Natural Resources. The plan includes several elements critical to achieving systemic, large-scale change. The INSMP:

- Urges the collaboration of agencies and organizations as well as private-public partnerships;
- Uses resources more efficiently by targeting practices for maximum gains;
- Relies on a cyclical "visioning" process which engages 3-5 HUC8's each year until the entire state has been engaged and the process begins again;
- Organizes soil and water districts within watershed boundaries;
- Addresses the need for adequate, sustained funding using private and public monies;
- Develops locally-led, comprehensive vision and action plans scaled to the HUC12 level which help "set expectations for conservation behavior" with consistent messaging from various stakeholder groups in order to change behavior;
- Establishes water quality monitoring protocols, which involve citizens in multi-scale planning, to capture sufficient and credible information and, share public-funded data, as well as develop a post-project monitoring plan for tracking progress.

Despite exhibiting many of the characteristics of a holistic watershed framework, the INSMP contains significant gaps. For instance, by design, it only addresses nonpoint source concerns and, it does not explicitly provide guidance that accounts for possible multiple benefits of conservation beyond protecting and enhancing water quality. Most important, it does not have sufficient funding to fully implement the plan.

Iowa's Nutrient Reduction Strategy (INRS). Launched in 2013, the INRS calls for a 45% reduction in nitrogen and phosphorus water pollution leaving the state. The strategy contains a thorough science assessment including information ranging from practice design specifics to cost estimates.[8] The INRS addresses both point and nonpoint sources, focusing exclusively on practices to curtail nutrient pollution. The INRS contains no timelines or benchmarks for achieving the statewide nutrient reductions, and no plan for an organized, scientifically based water quality monitoring program. It also lacks a social-science component that is vital to understanding and fostering lasting behavior change. Like the state nonpoint plan, the INRS does not include a strategy to fund implementation.

[8] Iowa Department of Agriculture and Land Stewardship, Iowa Department of Natural Resources and Iowa State University College of Agriculture and Life Sciences. "Iowa Nutrient Reduction Strategy: A science and technology-based framework to assess and reduce nutrients in Iowa waters and the Gulf of Mexico. Updated September 2014. (PDF online). http://www.nutrientstrategy.iastate.edu/sites/default/files/documents/NRSfull-141001.pdf.

A WATERSHED APPROACH IN ACTION: MINNESOTA'S ONE WATERSHED

Minnesota's watershed approach is an example of a comprehensive, statewide approach to securing and protecting healthy land and water. The passage of Minnesota's Clean Water Legacy Act in 2006 provided a policy framework and funding for state and local governments to accelerate efforts to monitor, assess and restore impaired waters, while also protecting unimpaired waters. The focus is on improving water quality, but the process addresses "the largest threats and greatest environmental benefits" unique to each watershed, which includes enhancing recreation, flood prevention and quality of life.

There are 81 major watersheds in Minnesota. The plan calls for intensive water quality monitoring and assessments to be conducted in each of these watersheds once every 10 years. Over the 10-year cycle, state and partner organizations work on each of the state's watersheds to evaluate water conditions, establish priorities and goals for improvement, and take action. By 2017, all watersheds in Minnesota will have at least begun their first cycle.[9]

Clearly, this type of dedicated effort takes sustained support. Minnesota's watershed approach is funded by the Legacy Amendment tax, which increases the state sales tax by three-eighths of one percent (from July 1, 2009 continuing until 2034), a third of which goes to a Clean Water Fund.[10] This funding is part of the constitutionally protected Environment and Natural Resources Trust Fund, which was established in 1988. Money in the Trust Fund was originally generated by the Minnesota State Lottery. The Trust Fund assets can be appropriated "for the public purpose of protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources." This fund has pumped more than $360 million to 800-plus projects around the state since 1991.[11]

IMPLEMENTING A WATERSHED APPROACH IN IOWA

The *Healthy Lands, Healthy Waters: Watershed Framework for Iowa* does not suggest the state abandon existing plans such as the Iowa Nonpoint Source Management Plan or the Iowa Nutrient Reduction Strategy. Rather, it recommends bringing them together under one umbrella to oversee coordinated implementation of Iowa's Surface Water Protection, Flood Mitigation and Watershed Management Act, to leverage limited resources and to maximize impacts. It also supports good planning work being done by the state's new Watershed Management Authorities. Integrating these efforts can provide a blueprint for coordinated action at the state and local level to reach short- and long-term watershed management goals.

Iowa's Water Resources Coordinating Council (WRCC) was created by the Iowa Legislature in the Surface Water Protection, Flood Mitigation and Watershed Management Act,[12] which was initiated as a result of recommendations in the 2007 Iowa Watershed Planning Taskforce Report.[13] The WRCC is comprised of designees from state and federal agencies that "seek to manage water comprehensively rather than compartmentally" and "coordinate programs, not to duplicate or supersede agency authorities and responsibilities." The WRCC is charged to work with 21 designated stakeholders who participate in the Iowa Watershed Planning Advisory Council (WPAC) to develop annual recommendations for improving water quality and mitigating floods. These entities, working together, are charged with implementing a watershed approach for Iowa. [14]

---

[9] Minnesota Pollution Control Agency. "Watershed approach to restoring and protecting water quality." https://www.pca.state.mn.us/water/watershed-approach-restoring-and-protecting-water-quality.

[10] Minnesota's Legacy. "About the funds." http://www.legacy.leg.mn/about-funds.

[11] Minnesota Environment and Natural Resources Trust Fund Website, http://www.legacy.leg.mn/funds/environment-natural-resources-trust-fund.

[12] Surface Water Protection and Flood Mitigation Act. Iowa Code 2015, Chapter 466B, https://www.legis.iowa.gov/DOCS/ACO/IC/LINC/Chapter.466b.pdf.

[13] Iowa Watershed Quality Taskforce 2007. Final Report. http://www.iowaagriculture.gov/WPAC/pdf/finallegislativereport2007.pdf.

[14] Surface Water Protection, Flood Mitigation and Watershed Management Act. Iowa Code 2015, Chapter 466B. https://www.legis.iowa.gov/DOCS/ACO/IC/LINC/Chapter.466b.pdf.

Most of the pieces for a comprehensive, coordinated watershed approach are authorized in the Act, including mandates for regional assessments, community-based sub-watershed planning and monitoring, and a marketing campaign that specifically addresses multiple benefits. The Act specifies a focus on surface water, and can address both point and nonpoint sources of pollution.

Watershed Management Authorities (WMAs) are a mechanism for cities, counties, Soil and Water Conservation Districts (SWCDs), and other stakeholders to cooperatively engage in watershed planning and management at the local level.[15] While the driving motivation for WMA formation may be water quality improvement and/or flood risk reduction, they may consider other issues and benefits. Their powers are limited: they cannot tax or condemn land, and current levels and methods of financial support are not sustainable. Even so, the need for a local entity to coordinate watershed planning and action has led to formation of 11 WMAs so far and a number of others are in the process of being organized.

Sustained, Adequate Funding is Critical. A watershed framework is a long-term, ongoing process and requires sustained, dedicated funding to ensure success. The current mechanism for conservation funding in Iowa relies on short-term, one-time appropriations, which often result in conservation efforts that are neither as coordinated, efficient or effective as they could be.

Iowa currently does not have a sustainable source of funding needed to implement a watershed framework. In 2010, Iowa voters approved a constitutional amendment that established the Natural Resource and Outdoor Recreation Trust Fund, which would be funded by a 3/8ths-cent increase in the state's sales/use tax[16]. However the sales tax increase has not been enacted. Based on recent sales/use tax data, the Trust Fund has the potential to provide $150-180 million for environmental and natural resource management and protection. A portion of the Trust Fund could be used as a consistent source of long-term funding for this watershed framework.[17]

Other funding sources can also help provide financial consistency from year-to-year. The Surface Water Protection, Flood Mitigation and Watershed Management Act authorizes creation of a fund based on annual appropriations to help support a Water Quality Initiative to implement the Iowa Nutrient Reduction Strategy.[18] Federal money from the U.S. Department of Agriculture provides cost share to implement conservation practices, and funding from the Environmental Protection Agency helps implement aspects of the state's Nonpoint Source Management Plan. Additional funding opportunities from cities, businesses and industry are already being identified to help support local watershed planning and implementation.

In conclusion, Iowa needs a watershed framework to improve the health of our water and land. State leaders have already laid the foundation, and existing plans and programs are well-suited to fit within it. We have good practices and projects underway and successful watershed planning models to learn from. We can have cleaner water and healthier land if we are willing to invest in the future. Working together, we can be the agents of change our lakes, rivers and streams so desperately need.

Published January 6, 2016

[15] Ibid.
[16] Iowa's Water and Land Legacy, http://iowaswaterandlandlegacy.org/sections/page/news.
[17] Iowa's Water and Land Legacy, http://iowaswaterandlandlegacy.org/sections/page/about.
[18] Surface Water Protection and Flood Mitigation Act. Iowa Code 2015, Chapter 466B. https://www.legis.iowa.gov/DOCS/ACO/IC/LINC/Chapter.466b.pdf.